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EXAMINER	
KONG, SZE-HON	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/536,601	Applicant(s) LEE ET AL.	
	Examiner SZE-HON KONG	Art Unit 3661	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.
2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.
3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-15* is/are pending in the application.
4a) Of the above claim(s) _____ is/are withdrawn from consideration.
5)☐ Claim(s) _____ is/are allowed.
6)☒ Claim(s) *1-15* is/are rejected.
7)☐ Claim(s) _____ is/are objected to.
8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.
10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a)☐ All b)☐ Some * c)☐ None of:
1.☐ Certified copies of the priority documents have been received.
2.☐ Certified copies of the priority documents have been received in Application No. _____.
3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Claim Objections

1. Claim 10 is objected to because of the following informalities:

The term “finalized telecomman” (line 4) should read “finalized telecommand".

Appropriate correction is required.

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. Claims 1, 2 and 8-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kamel (5,963,166) in view of Devereux et al. (6,608,589) and Posner (“Lessons Learned from the Design and Development of the Satellite Control Center (SCC) for the Far Ultraviolet Spectroscopic Explorer (FUSE) Mission”, Spaceops 98, Paper ID: 1b005, June 7, 1998).

For claim 1, Kamel discloses an apparatus for analyzing orbit and attitude data of a low-earth orbit satellite (Col. 7, line 62 - Col. 8, line 4 and Col. 9, lines 31-39) to establish a task schedule (Col. 12, lines 28-31), and generating a satellite command (Col. 10, lines 16-24 and Col. 12, lines 56-59), a low earth orbit satellite command planning apparatus comprising: a satellite event predictor for predicting various events related to the satellite (Col. 2, lines 28-33 and Col. 9, lines 14-21); a satellite task

schedule planner to inputted satellite tasks to schedule a satellite task schedule; a satellite telecommand planner for generating a set of telecommand data to be executed by the satellite according to the satellite task schedule established by the satellite task schedule planner (Col. 12, lines 21-32 and 54-59); Kamel does not specifically disclose a satellite task schedule planner for referring to the predicted various events to schedule a satellite task schedule and a mapping rule applier including a plurality of mapping rules applied to the respective inputted satellite tasks of the satellite. Devereux discloses a satellite task schedule planner for referring to the predicted various events to schedule a satellite task schedule (Col. 2, lines 31-35, col. 3, lines 4-11 and col. 6, lines 55-62). Posner discloses a mapping rule applier including a plurality of mapping rules applied to the respective inputted satellite tasks of the satellite (Section 2.2, paragraph 3). It would have been obvious for one of ordinary skill in the art at the time the invention was made to modify the invention of Kamel to predict various events to schedule a satellite task schedule, taught by Devereux and include a mapping rule applier including a plurality of mapping rules applied to the respective task schedules of the satellite, taught by Posner. The motivation to include a mapping rule applier and predict various events to schedule is to map out the rule for the operation of the satellite for better regulation and control.

For Claim 2, Kamel discloses the satellite task schedule established by the satellite task schedule planner include an ID, an execution time, and a parameter (Col. 2, lines 28-33), and the satellite telecommand planner compares the parameter

condition with mapping rules of the mapping rule applier, and automatically generates a set of satellite commands corresponding to the mapping rules matched with the condition (Col. 9, line 63 – Col. 10, line 1 and Col. 12, lines 37-44).

For claim 8, Kamel discloses In a control system for monitoring and controlling a low earth orbit satellite, a LEO (low earth orbit) satellite control system comprising: an antenna for executing radio communication with the satellite; a satellite operating system for receiving a telemetric signal of the satellite, processing and analyzing the signal (Col. 5, lines 18-26 and Col. 6, lines 3-20), and transmitting a telecommand signal to the satellite through the antenna; a task analysis and planning system (TAPS) for analyzing orbit and attitude data of the satellite to establish a task schedule (Col. 12, lines 2-6 and Col. 12, lines 28-35).

Kamel discloses task schedule to generate a set of telecommand data (Col. 12, lines 21-36 and Col. 12, lines 51-59), but does not specifically disclose a task analysis and planning system (TAPS) for predicting various satellite events, and for inputting satellite task schedules to establish a finalized telecommand plan by applying a plurality of mapping rules according to the established task schedule to generate a set of telecommand data; and an interface for transmitting and receiving data between the systems. Devereux discloses a TAPS for predicting various satellite events (Col. 2, lines 31-35, col. 3, lines 4-11 and col. 6, lines 55-62). Posner discloses a TAPS for inputting satellite task schedules to establish a finalized telecommand plan (Section 2.2, paragraph 3-4 and section 2.3, paragraph 1-2) by applying a plurality of mapping rules

according to the established task schedule to generate a set of telecommand data (Section 2.3, paragraph 6); and an interface for transmitting and receiving data between the systems (Figure 1).

It would have been obvious for one of ordinary skill in the art at the time the invention was made to modify the invention of Kamel to include predict various satellite events, taught by Devereux and inputting satellite task schedules to establish a finalized telecommand plan by applying a plurality of mapping rules according to the established task schedule to generate a set of telecommand data and an interface for transmitting and receiving data between the systems, taught by Posner. The motivation to predict various satellite events and inputting satellite task schedules to establish a finalized telecommand plan by applying a plurality of mapping rules according to the established task schedule to generate a set of telecommand data and an interface for transmitting and receiving data between the systems is for the systems to generate a set of command for the satellite according to the schedule and apply appropriate and accurate tasks to control the satellite with desirable rules and predictions.

For claim 9, Kamel discloses the TAPS comprises: a satellite event predictor for predicting various events related to the satellite (Col. 9, lines 12-21); a satellite task schedule planner for referring to the event to schedule a task schedule of the satellite, and establishing a satellite task schedule; a satellite telecommand planner for generating a set of telecommand data to be executed by the satellite according to the

satellite task schedule established by the satellite task schedule planner (Col. 12, lines 21-32 and 54-59).

Kamel does not specifically disclose a satellite task schedule planner for referring to the predicted various events and to inputted satellite tasks to schedule a satellite task schedule and a mapping rule applier including a plurality of mapping rules applied to the respective inputted satellite tasks of the satellite. Devereux discloses Devereux discloses a satellite task schedule planner for referring to the predicted various events to schedule a satellite task schedule (Col. 2, lines 31-35, col. 3, lines 4-11 and col. 6, lines 55-62). Posner discloses a task schedule planner for referring to inputted satellite tasks to schedule a satellite task schedule and a mapping rule applier including a plurality of mapping rules applied to the respective inputted satellite tasks of the satellite (Section 2.2, paragraph 3-4). It would have been obvious for one of ordinary skill in the art at the time the invention was made to modify the invention of Kamel to include a task schedule planner for referring to the predicted various events, taught by Devereux and to inputted satellite tasks to schedule a satellite task schedule and a mapping rule applier including a plurality of mapping rules applied to the respective inputted satellite tasks of the satellite, taught by Posner. The motivation to include a tasks schedule planner to refer to the predicted events and inputted tasks for schedule and a mapping rule applier is to map out the rule for the operation of the satellite for better regulation and control.

For claim 10, Kamel discloses the satellite operating system comprises: a signal transmit/receive converter for receiving a telemetric signal of the satellite and transmitting a telecommand signal to the satellite through the antenna (Col. 6, lines 3-20 and Col. 7, line 62 – Col. 8, line 4); a satellite telesurveillance unit for processing and analyzing the telemetric signal received from the satellite to monitor the states of the satellite (Col. 9, lines 45-56); and a satellite telecommand transmitter for transmitting a control command required for the satellite (Col. 9, line 63 – Col. 10, line 4).

Kamel does not specifically disclose transmitting a telecommand signal, corresponding to the finalized telecommand plan, to the satellite. Posner discloses transmitting a telecommand signal, corresponding to the finalized telecommand plan, to the satellite (Section 2.3, paragraph 1-2). It would have been obvious for one of ordinary skill in the art at the time the invention was made to modify the invention of Kamel to transmit the finalized telecommand plan to the satellite, taught by Posner to fully automate the satellite with planned tasks and rules.

3. Claims 3-5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kamel (5,963,166) in view of Posner ("Lessons Learned from the Design and Development of the Satellite Control Center (SCC) for the Far Ultraviolet Spectroscopic Explorer (FUSE) Mission", Spaceops 98, Paper ID: 1b005, June 7, 1998) and Haag et al. ("Use of WWW Technology for Mission Control Systems", ESA Bulleton Number 97, March 1999).

For claim 3, Kamel discloses a operation control center for control and monitor the satellite (Col. 7, line 62 - Col. 8, line 2), but does not specifically disclose a first user interface for establishing the mapping rules, and wherein the first user interface comprises: a list display for displaying a mapping rule list; an information display for a mapping rule name, a task name to which the mapping rule is applied, and a relative time command sequence; and a condition display for displaying a mapping condition according to a parameter of the task, and the mapping condition includes a plurality of logical operation conditions and comparison conditions. Posner discloses a telemetry-interface-display generation, configuration management, and database management to monitor and control; and customized software were designed and developed specific to mission (Section 3.2, lines 1-7) and the mapping condition includes a plurality of logical operation conditions and comparison conditions (Section 2.2, paragraph 4). Haag discloses systems for telemetry displays and telecommand history displays and interface for user to give instructions to the system for satellite control (Section "Analogies between MCS and other systems", paragraph 1).

It would have been obvious for one of ordinary skill in the art at the time the invention was made that the telemetry-interface-display generation, configuration and database management for satellite monitor and control, taught by Posner and the telemetry displays and interface for user control of the satellite, taught by Haag can perform the same functions as disclosed in the claim. It would have been obvious for one of ordinary skill in the art at the time the invention was made to combine the invention of Kamel with a user interface for displaying lists of mapping rules, information

and command and the mapping condition includes a plurality of logical operation conditions and comparison conditions, taught by Posner and condition display for displaying a mapping condition according to a parameter of the task, taught by Haag. The motivation to combine the invention of Kamel to include a user interface for displaying the information and condition of the satellite is to be able to view the information clearly by an operator and for an operator to easily give instructions to the system for satellite control.

For claim 4, Kamel does not specifically disclose the logical operation conditions and comparison conditions include a logical product (AND), a logical sum (OR), an equal sign (=), a greater than sign (>), and a less than sign (<). Posner discloses the logical operation conditions and comparison conditions include a logical product, a logical sum, an equal sign, a greater than sign, and a less than sign (Section 2.2, paragraph 4). It is well known in the art that logical operations include a logical product, a sum, an equal sign, greater than sign and a less than sign.

It would have been obvious for one of ordinary skill in the art at the time the invention was made to modify the invention of Kamel to include a logical operation conditions and comparison, taught by Posner. The motivation to include logical operation conditions for condition comparison is to determine the condition and information of the satellite for accurate control of the satellite.

For claim 5, Kamel discloses a operation control center for control and monitor the satellite (Col. 7, line 62 - Col. 8, line 2), but does not specifically disclose a second user interface for defining the relative time command sequence and wherein the second user interface comprises: a list display for displaying a relative time command sequence list; a command display for displaying a list of commands that can be added to a name of the relative time command sequence; and a command sequence display for displaying a set of commands included in the name of the relative time command sequence; and wherein the second user interface selects the command included in the command display and edits a command set sequence of the command sequence display. Posner discloses a telemetry-interface-display generation, configuration management, and database management to monitor and control; and customized software were designed and developed specific to mission (Section 3.2, lines 1-7). Haag discloses systems for telemetry displays and telecommand history displays and interface for user to give instructions to the system for satellite control (Section "Analogies between MCS and other systems", paragraph 1).

It would have been obvious for one of ordinary skill in the art at the time the invention was made that the telemetry-interface-display generation, configuration and database management for satellite monitor and control, taught by Posner and the telemetry displays and interface for user control of the satellite, taught by Haag can perform the same functions as disclosed in the claim. It would have been obvious for one of ordinary skill in the art at the time the invention was made to combine the invention of Kamel with a user interface for displaying lists of relative time command

sequence list, a command display for displaying a list of commands that can be added to a name of the relative time command sequence, taught by Posner, and a command sequence display for displaying a set of commands included in the name of the relative time command sequence; and wherein the second user interface selects the command included in the command display and edits a command set sequence of the command sequence display, taught by Haag. The motivation to combine the invention of Kamel to include a user interface for displaying lists of relative time command sequence list and command lists for editing a command set sequence of the satellite is to be able to view the available commands for satellite control by an operator and for an operator to access and modify instructions being given to the system for satellite control.

4. Claims 6, 7 and 11-15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kamel (5,963,166) in view of Devereux (6,608,589), Tandler (6,275,677) and Posner ("Lessons Learned from the Design and Development of the Satellite Control Center (SCC) for the Far Ultraviolet Spectroscopic Explorer (FUSE) Mission", Spaceops 98, Paper ID: 1b005, June 7, 1998).

For claim 6, Kamel discloses a satellite command planning method for a satellite control system to generate a satellite telecommand from a satellite task schedule (Col. 12, lines 21-33).

Kamel does not specifically disclose predicting, using a task analysis and planning system (TAPS), various satellite events; comparing, using the TAPS, a satellite

task included in a plurality of satellite task schedules with a predefined mapping rule when the satellite task schedules are input into the TAPS; generating, using the TAPS, a set of commands defined by a corresponding mapping rule when the mapping rule corresponding to a condition of the satellite task is found after the comparison, and comparing a next satellite task with a next mapping rule when no mapping rule corresponding to the satellite task is found; planning, using the TAPS, a preliminary satellite command plan based on the predicted various satellite events and the generated set of satellite commands; and inserting, using the TAPS, a satellite command indicator additionally needed for the satellite command from the preliminary satellite command plan to establish a finalized telecommand plan. Devereux discloses predicting, using a task analysis and planning system (TAPS), various satellite events (Col. 2, lines 31-35, col. 3, lines 4-11 and col. 6, lines 55-62) and planning predicted various satellite events (Abstract). Tandler discloses comparing, using the TAPS, a satellite task included in a plurality of satellite task schedules with a predefined mapping rule when the satellite task schedules are input into the TAPS (Col. 2, lines 42-53); generating, using the TAPS, a set of commands defined by a corresponding mapping rule when the mapping rule corresponding to a condition of the satellite task is found after the comparison, and comparing a next satellite task with a next mapping rule when no mapping rule corresponding to the satellite task is found (Col. 4, lines 36-54); Posner discloses planning, using the TAPS, a preliminary satellite command plan based on the generated set of satellite commands; and inserting, using the TAPS, a satellite command indicator additionally needed for the satellite command from the preliminary

satellite command plan to establish a finalized telecommand plan (Section 2.3, paragraph 1-2).

It would have been obvious for one of ordinary skill in the art at the time the invention was made to modify the invention of Kamel to predict and plan various satellite events, taught by Devereux, compare a satellite task included in a plurality of satellite task schedules with a predefine mapping rule when the satellite task schedules are input into the TAPS, generating a set of commands defined by a corresponding mapping rule when the mapping rule corresponding to a condition of the satellite task is found after the comparison, and comparing a next satellite task with a next mapping rule when no mapping rule corresponding to the satellite task is found, taught by Tandler and planning a preliminary satellite command plan based on the generated set of satellite commands, and inserting a satellite command indicator additionally needed for the satellite command to establish a finalized telecommand plan, taught by Posner. The motivation to combine the inventions is to predict, plan, compare satellite task schedules, and generate a set of commands corresponding to mapping rule with a matched condition of the satellite and generate final and confirmed command plan before it is executed by the satellite to prevent any errors in the command plan.

For claim 7, Kamel does not disclose a single mapping rule includes a plurality of sets of satellite commands in the generating step, the generating step comprises selecting a single set of satellite commands corresponding to a parameter of the satellite task from among the sets of satellite commands. Tandler discloses a single

mapping rule includes a plurality of sets of satellite commands in the generating step, the generating step comprises selecting a single set of satellite commands corresponding to a parameter of the satellite task from among the sets of satellite commands (Col. 4, lines 43-54).

It would have been obvious for one of ordinary skill in the art at the time the invention was made to modify the invention of Kamel to include a single mapping rule includes a plurality of sets of satellite commands in the generating step and selecting a single set of satellite commands corresponding to a parameter of the satellite task from among the sets of satellite commands. The motivation is to select and execute an appropriate command for the satellite among sets of satellite commands.

For claims 11, 12, 14 and 15, Kamel discloses sending telecommand plan to a satellite operating system (SOS) (Col. 9, line 46 – col. 10, line 4); transmitting the telecommand plan to a Low Earth Orbit (LEO) satellite; the generating step is performed with a satellite task schedule planner of the TAPS; and the planning step is performed with a satellite telecommand planner of the TAPS (Col. 12, lines 21-36).

Kamel does not disclose sending the telecommand plan through an ethernet. Posner discloses sending the telecommand plan through an ethernet (Figure 2, 4 and section 2.3, paragraph 4-5).

For claim 13, Kamel does not disclose the predicting step is performed with a satellite event predictor of the TAPS. Devereux discloses the predicting step performed (Col. 2, lines 31-35, col. 3, lines 4-11 and col. 6, lines 55-62). It would have been obvious for one of ordinary skill in the art at the time the invention was made to modify

the invention of Kamel with the predicting step performed with a satellite event predictor, taught by Devereux to accurately and efficiently operate and plan the tasks of a satellite. For claim 16, Kamel does not disclose the inserting step is performed with a satellite telecommand planner of the TAPS. Posner discloses the inserting step is performed with the planner (Section 2.3, paragraph 1-2). It would have been obvious for one of ordinary skill in the art at the time the invention was made to modify the invention of Kamel with the inserting step, taught by Posner to provide editing function to the telecommand plan.

Response to Arguments

2. Applicant's arguments filed 5/21/2008 have been fully considered but they are not persuasive.

On page 13-14 of the Applicant's Response, applicant submits that claims 6-7 are depend from claim 1.

The Examiner respectfully disagrees with Applicant, because claim 6 is an independent claim and claim 7 depends on claim 6.

3. Applicant's arguments with respect to claims 1-16 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

4. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP

§ 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to SZE-HON KONG whose telephone number is (571)270-1503. The examiner can normally be reached on 7:30AM-5PM Mon-Fri, Alt. Fri. Eastern Time.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Thomas Black can be reached on (571) 272-6956. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

8/6/2008

/SZE-HON KONG/

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/Thomas G. Black/
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